

Research Cruise Report

Channel Islands National Marine Sanctuary



Prepared by	Dr. Jennifer Caselle
Date	10/16/00

1. VESSEL	R/V BALLENA	2. PROJECT DATES	9/19-22/00 10/10-12/00
3. PROJECT TITLE	Annual surveys of benthic invertebrates, algae and fishes for PISCO.		
4. CRUISE LOG	<p>9/19/00 : Anacapa Middle Island, 34.00.650 N, 119.23.115 W 9/20/00: Anacapa, Landing Cove 9/21/00 : Anacapa, Cathedral Cove and Santa Cruz Island, Pelican Cove, 34.01.845N, 119.41.780W 9/22/00: Santa Cruz Island, Hazards Cove, 34.03.376N, 119.49.276W</p> <p>10/10/00: Anacapa Middle Island, 34.00.650 N, 119.23.115 W, and Anacapa, Cathedral Cove 10/11/00: Anacapa, Landing Cove, and Santa Cruz Island, Pelican Cove, 34.01.845N, 119.41.780 W 10/12/00: Santa Cruz Island, Pelican Cove, 34.01.845N, 119.41.780 W, and Santa Cruz Island, Hazards Cove, 34.03.376N, 119.49.276W</p> <p>All sites: SCUBA diving to monitor benthic invertebrates and fishes. We made 3-4 dives daily ranging from 30-70 minutes per dive Visibility ranged from good to excellent (20->100 ft). Water temps ranges from 16-19 C.</p> <p>Did regular monitoring on our biological moorings at Anacapa on 9/20/00 and on our SMURFS (recruit fish collectors) at Anacapa on 10/11/00.</p>		
5. AMENDMENTS TO CRUISE PLAN/ COMMENTS	None		
6. PROJECT RESULTS	<p>General Goals</p> <p>One component of PISCO research is to evaluate variation in the distribution and abundance of intertidal and subtidal organisms on broad spatial and temporal scales along the coast of the western United States. General goals are to provide quantitative information on the abundance through time of invertebrates, algae and fishes in relation to latitude, biogeographic breakpoints (e.g., Cape Blanco, Monterey Bay, Point Conception), habitat (subtidal vs. intertidal), and human activity. We intend to use this information to address questions regarding the relationship between community patterns and biological, physical, and oceanographic processes ranging from local scales to meso-scales to large scales. These include:</p> <ul style="list-style-type: none"> Do nearshore benthic communities vary in space predictably with (e.g.) local shore topography? Variation in the intensity of biological processes? Larger-scale coastal geomorphology? Continental margin width? Oceanographic processes such as upwelling, current, or phytoplankton productivity? Intensity of human usage? Do nearshore benthic communities vary through time predictably with (e.g.) annual 		

	<p>differences in physical environment (temperature, wave regime)? El Niño and/or La Niña? Longer-scale environmental regime changes?</p> <p>Subtidal surveys are designed to parallel intertidal surveys, and will be used to address a complementary set of questions:</p> <ul style="list-style-type: none"> • Are patterns and dynamics of community structure in nearshore subtidal communities influenced by a) biogeographic discontinuities such as those associated with Point Conception, Monterey Bay and (maybe) Point Blanco, or b) spatial and temporal scale? • Are patterns and dynamics of community structure in subtidal habitats concordant with patterns in adjacent intertidal sites? Are the same patterns of faunal breaks and species ranges seen in subtidal and intertidal habitat? • Are patterns and dynamics of community structure in subtidal habitats associated with specific physical or biogenic habitat features? • Are patterns and dynamics of community structure in subtidal habitats concordant across taxa (i.e. do sites with high diversity of invertebrate taxa also have high fish and algal diversity)? • Are patterns and dynamics of community structure in subtidal habitats concordant within ecological functional groups or life history traits (e.g., longevity, dispersal potential, mobility)? • Can we use marine reserves to distinguish natural variation in community structure from variation caused by human activities such as fishing, kelp harvesting, and recreation by comparing within, among and outside marine reserves? <p>Results to date</p> <p>We conducted subtidal community structure monitoring at three sites around Anacapa island in 1999. This year we have finished monitoring two Anacapa sites (inside and outside of the marine reserve) as well as two Santa Cruz Island sites. We intend to complete two more SC Island sites before the end of 2000. The 1999 comparison of the reserve and non-reserve site showed some interesting patterns. Recruitment of fishes was generally not greater in the reserve than outside of it. For some species (Blue rockfish (<i>Sebastes mystinus</i>) and Olive rockfish (<i>S. serranoides</i>)) recruitment was greatest outside of the reserve. However, some of the largest adult fishes were observed at Cathedral Cove (inside). For the mega-invertebrates we saw a pattern for urchins and Ca spiny lobster. Purple urchins were more abundant outside of the reserve while spiny lobster were more abundant inside. The giant kelp (<i>Macrocystis pyrifera</i>) was slightly more abundant outside of the reserve but present at all sites.</p> <p>The 2000 data are currently being analyzed.</p>
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